



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/574,954 | 04/07/2006 | Toshikazu Suganuma | 80360(47762) | 7305 |
| 21874 7590 07/19/2011 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205 | | | | |
| EXAMINER | | | | |
| CHAUDRY, ATIF H | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 3753 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 07/19/2011 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/574,954

Applicant(s)

SUGANUMA ET AL.

Examiner

ATIF CHAUDRY

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 6-8, 10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6-8, 10 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-840)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 07/05/2011
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of the claims

1. Applicant's amendment as filed on 01/04/2010 has been entered. Claims 1, 8, and 12 have been amended. Currently claims 1, 6-8, 10, 12 are pending in this application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 8, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Zon (3652109).

5. Van Zon (Fig. 1a) discloses a liquid supply apparatus comprising a supply section 4; and a supply liquid circulation tube 3 formed in a hollow fiber (tubular) shape.

The recitations "delivers the supply liquid", "causes the supply liquid to flow from the supply section to the primary fluid circulation tube", "supply solution is supplied from the supply section", "a pressure P2 of the primary fluid in the primary fluid circulation tube always satisfy the formula", "P1 is controlled so as to maintain a constant level", "a supply quantity of the supply liquid can be determined without performing feedback control", etc. are seen as functional recitations which do not impart structural feature to the claim. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function [MPEP 2114]. Regarding recitations of ultrapure water and aqueous solution, expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim [MPEP 2115]. Van Zon discloses the tubing (col 6, line 36) assembly made from polyethylene resin. The preamble is not given patentable weight since it is not seen as limiting the structure of the claim.

6. Claims 1, 6-8, and 10, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al. (JP2000208471) in view of Laverdiere (US PG Pub 20050173003) and Baker (3410531) further in view of Van Zon (3652109).

7. Ota et al. (abstract, Fig. 1) discloses a liquid supply apparatus for and illustrates a method of supplying an electrolytic aqueous solution (supply liquid) to ultrapure water (primary fluid) comprising of a supply section having a supply liquid tube, and primary section comprising a primary circulation tube. In operation, the supply section fluid must

inherently have larger pressure than the primary section in order to inject the additive liquid into the primary fluid. Ota et al. discloses regulator 4 to regulate the additive.

Ota et al. fails to disclose a hollow fiber shape circulation tube as pressure/flow regulators. Laverdiere (page 7, 2nd column, lines 30-35) teaches a fluid flow controller using hollow fiber tube to regulate pressure drops and thus control the flow rate. It would have been obvious to a person of ordinary skill in the art to have provided the mixing device disclosed by Ota et al. with hollow fiber tube as taught by Laverdiere in order to provide a convenient method of pressure and flow control.

Ota et al. fails to disclose keeping the supply liquid pressure constant. Baker (Fig. 1-3) teaches a method of mixing one liquid 40 to another liquid 42 while maintaining a desired mixing ratio when the two liquids are being supplied at a certain pressure (by pumps 48, 50) wherein flow rate can be varied while the mixing ratio is maintained at a constant level when the two liquids are fed at constant pressures without the use of a feedback mechanism. It would have been obvious to a person of ordinary skill in the art to have provided the mixing device disclosed by Ota et al. with a device providing a constant mixing ratio at variable flow rates (with constant upstream pressures) as taught by Baker in order to maintain desired mixing ratio without the requirement of a feedback control.

Ota et al. fails to disclose optimum ranges of tube diameter, flow rate, concentration ratio, or pressure ratio. It would have been obvious to one having

ordinary skill in the art at the time the invention was made to have used the claimed optimum ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Ota et al. fails to disclose the material of fluid conduits. Van Zon (Fig. 1a) teaches a manifold wherein the tubing (col 6, line 36) assembly is made from polyethylene resin. It would have been obvious to a person of ordinary skill in the art to have provided the mixing device disclosed by Ota et al. with fluid conduits made from polyethylene resin as taught by Van Zon as a well-known material for making conduits yielding predictable results.

8. Claims 1, 6-8, and 10, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al. (JP2000208471) in view of Kumano et al. (US PG Pub 20060144777) and Baker (3410531) further in view of Van Zon (3652109).
9. Ota et al. (abstract, Fig. 1) discloses a liquid supply apparatus for and illustrates a method of supplying an electrolytic aqueous solution (supply liquid) to ultrapure water (primary fluid) comprising of a supply section having a supply liquid tube, and primary section comprising a primary circulation tube. In operation, the supply section fluid must inherently have larger pressure than the primary section in order to inject the additive liquid into the primary fluid. Ota et al. discloses a regulator 4 to regulate the additive.

Ota et al. fails to disclose a hollow fiber shape circulation tube as pressure/flow regulator. Kumano et al. (page 5, para 47) teaches using hollow fibers for optimizing pressure in fluid flow. It would have been obvious to a person of

ordinary skill in the art to have provided the mixing device disclosed by Ota et al. with hollow fiber material for tubing as taught by Kumano et al. in order to provide a convenient method of pressure and flow control.

Ota et al. fails to disclose keeping the supply liquid pressure constant. Baker (Fig. 1-3) teaches a method of mixing one liquid 40 to another liquid 42 while maintaining a desired mixing ratio when the two liquids are being supplied at a certain pressure (by pumps 48, 50) wherein flow rate can be varied while the mixing ratio is maintained at a constant level when the two liquids are fed at constant pressures without the use of a feedback mechanism. It would have been obvious to a person of ordinary skill in the art to have provided the mixing device disclosed by Ota et al. with a device providing a constant mixing ratio at variable flow rates (with constant upstream pressures) as taught by Baker in order to maintain desired mixing ratio without the requirement of a feedback control.

Ota et al. fails to disclose optimum ranges of tube diameter, flow rate, concentration ratio, or pressure ratio. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the claimed optimum ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Ota et al. fails to disclose the material of fluid conduits. Van Zon (Fig. 1a) teaches a manifold wherein the tubing (col 6, line 36) assembly is made from

polyethylene resin. It would have been obvious to a person of ordinary skill in the art to have provided the mixing device disclosed by Ota et al. with fluid conduits made from polyethylene resin as taught by Van Zon as a well-known material for making conduits yielding predictable results.

Response to Arguments

1. Applicant's arguments filed 09/30/2010 have been fully considered but moot in view of new grounds of rejection. Van Zon has been cited to show teaching of polyethylene material for fluid tubing.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ATIF CHAUDRY whose telephone number is (571)270-3768. The examiner can normally be reached on Mon-Fri 8-5 Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Hepperle can be reached on (571)272-4913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Atif H Chaudry/
Examiner, Art Unit 3753

/John Rivell/
Primary Examiner, Art Unit 3753

7/16/2011